Mount Rainier National Park
Science Brief

National Park Service
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Mount Rainier National Park

Alpine vascular plant biodiversity at Spray Park, Mount Rainier National Park

Sydne Record, Harvard University, Harvard Forest, Petersham, MA.

IMPORTANCE

Across the globe mean annual temperatures have risen over the past century, with notable rapid changes in high latitude alpine areas. Within these high altitude areas, global meta-analyses have shown that the response of vegetation position to warming over the last century has been mixed. Some areas have shown advancement of trees to higher altitudes and elevational shifts of alpine plants of 1-4 m per decade, whereas other areas reveal no substantial change in the upper limit of treeline. Mount Rainier National Park is a sky island that is home to many rare alpine plants. To assess the degree of threat of climate change to this rare alpine vegetation, it is important to perform baseline monitoring of vegetation in the transition zones between sub-alpine and alpine areas. In 2002, a systematic survey of the vascular plants in such a transition zone along an elevational gradient at Spray Park was performed. In this study, we resampled the transects sampled in 2002 to assess whether or not there have been any changes in the vegetation position at Spray Park over the past decade.

Figure 1. A 20 cm x 50 cm quadrat used to measure vascular plant abundance in the sub-alpine and alpine transition zone.

Status and trend

In 2012, we were able to confidently relocate five of the eight pairs of transects sampled in 2002. Along these transects we recorded the same data that we collected in 2002 (e.g., percent cover of all vascular plant species in 20cm x 50 cm quadrats every 5m (Fig. 1), elevation, slope, substrate, and stability). In 2013, we plan to analyze the data making comparisons between the 2002 and 2012 data to see if there have been any changes in vegetation

along the sub-alpine and alpine transition zone in Spray Park over the past decade.

Discussion

Long term ecological data can provide insights that short term data may not capture. The data gathered from this decade long comparison of plants at Spray Park will enable us to better understand how vascular plant distributions are changing (or not) in response to a changing climate. This information will help park staff to make more informed management decisions in the face of global climatic change.